



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/831,724 | 05/15/2001 | Emma L Wood | 124-852 | 9963 |

23117 7590 01/27/2004

NIXON & VANDERHYE, PC
1100 N GLEBE ROAD
8TH FLOOR
ARLINGTON, VA 22201-4714

EXAMINER

YAMNITZKY, MARIE ROSE

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1774

15

DATE MAILED: 01/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/831,724

Applicant(s)

WOOD ET AL.

Examiner

Marie R. Yamnitzky

Art Unit

1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2003 and 09 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submissions filed on June 10, 2003 (Rule 132 Declaration of Ian Charles Sage) and July 09, 2003 (Amendment) have been entered.

2. With respect to the status identifiers used in the amendment filed July 09, 2003, the examiner notes that the correct identifier for claims 2, 4 and 11 is "(Currently Amended)".

3. Claims 1-11 are pending.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 2-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitations imposed by the phrase "in conjunction with the single organic layer" as recited in claim 2, with claims 3-8 dependent directly or indirectly therefrom, are not clear.

Claim 4 is confusing. It is not clear how an electrode modifying layer that must be at an electrode/organic layer interface can be the anode (an electrode) itself.

Claim 5: It is not clear if PEDOT or polyaniline is a component of the electrode modifying layer that is the anode (per claim 4, from which claim 5 depends), or a component of the electrode modifying layer adjacent to the anode.

5. Claims 1, 2, 4, 6 and 9-11 stand rejected under 35 U.S.C. 102(b) as being anticipated by JP 9-289081 for reasons of record in Paper No. 5.

6. Claims 2-8 stand rejected under 35 U.S.C. 103(a) as being unpatentable over JP 9-289081 further in view of Zhang et al. (WO 97/32452) and Hung et al. (US 5,677,572) for reasons of record in Paper No. 5.

7. Claims 1-4, 6 and 9-11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al. (US 5,281,489) in view of Boyer et al. (US 5,189,029) or Czerney et al. (*Applied Fluorescence Technology*, June 1989, pp. 13-14) or Czerney et al. (DD 265266 A1) for reasons of record in Paper No. 5.

8. Claims 5, 7 and 8 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al. (US 5,281,489) in view of Boyer et al. (US 5,189,029) or Czerney et al. (*Applied Fluorescence Technology*, June 1989, pp. 13-14) or Czerney et al. (DD 265266 A1), further in view of Zhang et al. (WO 97/32452) and Hung et al. (US 5,677,572) for reasons of record in Paper No. 5.

9. Applicants' arguments filed July 09, 2003 have been fully considered but they are not persuasive. The Rule 132 Declaration of Ian Charles Sage has also been considered.

The examiner respectfully disagrees with applicants' statement that the amendments made to claim 1 exclude the two layer structure described in JP 9-289081. The present claim language is open in reciting "device comprising". The "single organic layer" language of present claim 1 requires that one organic layer comprise materials providing the functions of electron transportation, hole transportation and light emission as taught in lines 4-5 on page 6 of the present specification. The "single organic layer" language does not exclude the presence of one or more additional organic layers between the electrodes. Claim 5, for example, can be interpreted as requiring two organic layers between the anode and cathode such that the device has the structure of: substrate, anode, layer of PEDOT or polyaniline, "single organic layer", cathode. Applicant argues that claim 5 as dependent indirectly from claim 2 provides for an electrode modifying layer in conjunction with the single organic layer and thus does not allow for the presence of two organic layers between the electrodes. However, unless "in conjunction with" means the two differently named layers are actually the same layer, the layer comprising PEDOT or polyaniline is an organic layer in addition to the "single organic layer".

The rejections based on JP 9-289081 could be overcome by amending the first four lines of claim 1 to read as follows:

-- An organic light emitting diode device comprising a substrate bearing a layer structure between an anode and a cathode, wherein said layer structure consists of a single organic layer comprising a hole transporter, an electron transporter and a light emitter, optionally an electrode

Art Unit: 1774

modifying layer between the single organic layer and the anode, and optionally an electrode modifying layer comprising either MgF_2 or LiF between the single organic layer and the cathode, wherein either or both of --.

The phrase “layer structure” is inherently supported by the original disclosure. By limiting the layer structure to one to three layers (the single organic layer and the two optional electrode modifying layers) and requiring the optional electrode modifying layer closest to the cathode to comprise MgF_2 or LiF , the preceding suggested language excludes the layer structure required by JP 9-289081. According to JP 9-289081, when the pyromethene- BF_2 complex is present in a hole transporting layer (thereby providing a single organic layer that inherently provides the functions of electron transportation, hole transportation and light emission), the device must comprise an additional organic layer between the layer comprising the BF_2 complex and the cathode.

With respect to the rejections based on Mori et al. in view of additional references, the examiner has considered the data set forth in the Rule 132 Declaration but does not find the declaration to be sufficient to overcome the rejections. The declaration compares two devices, one within the scope of the present claims wherein A-D is the first possibility set forth in claim 1 and one outside the scope of the present claims, both of which comprise four components in the single organic layer. The present claims limit the materials used in the single organic layer in addition to the material of formula I by function. None of the present claims limits the materials used in the single organic layer in addition to the material of formula I to the specific materials utilized for the devices set forth in the Rule 132 Declaration. Mori et al. teach that luminescence

Art Unit: 1774

efficiency can be optimized by selecting an appropriate combination of fluorescent luminescent agent, at least one hole moving and donating agent, and at least one electron moving and donating agent based on relative ionization potentials and electron affinities. For example, see column 25, line 11-c. 27, l. 62. Insufficient data are provided in the declaration to determine whether the better device performance obtained with the device comprising the difluoroborate compound compared to the device comprising coumarin 6 merely reflects a more optimal combination of materials based on relative ionization potentials and electron affinities.

Further, the Rule 132 Declaration contains no data with respect to embodiments of the present claims in which A-D is the second or third possibility set forth in claim 1. Therefore, the declaration is insufficient to overcome the rejections based on Mori et al. in view of secondary references disclosing laser dyes of formula I wherein A-D is the second or third possibility set forth in claim 1.

10. Miscellaneous:

In the penultimate line of claim 1, the period after “v” should be deleted.

The last line of claim 1 appears to be superfluous given the amendment to lines 2 and 3 of claim 1.

In the third line of claim 11, the phrase “at least one of a further a” is grammatically confusing.

Art Unit: 1774

11. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for Art Unit 1774 is (703) 872-9306 for all official faxes.
(Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY
January 22, 2004



MARIE YAMNITZKY
PRIMARY EXAMINER

1774